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(72) Inventor: Akashi, Shunji
67-3, Tateno
Kurobe-shi Toyama-ken(JP)
Inventor: Oda, Kiyoshi
2635-3, Kamikoluzumi
Namerikawa-shi Toyama-ken(JP)

71 Applicant: YOSHIDA KOGYO K.K.
No. 1 Kanda Izumi-cho Chiyoda-ku
Tokyo(JP)

(72) Inventor: Akashi, Shunji

**67-3, Tateno
Kurobe-shi Toyama-ken(JP)**

Inventor: Oda, Kiyoshi

2635-3. Kamikolzumi

Namerikawa-shi Toyama-ken(JP)

74) **Representative: Patentanwälte Leinweber & Zimmermann**
Rosental 7/II Aufg.
D-8000 München 2(DE)

57 An automatic lock slider (10) for slide fastener comprises a slider body (11), a support lug (18) integral with and disposed over the top surface of the slider body (11) and a pull tab (20) with which to move the slider (10). The slider (10) includes a locking member (22) in the form of a polygonal leaf spring having at one end a locking prong (22a) and at the other end a U-bent portion (22c). A bulged portion (22d) is formed intermediate the prong (22a) and the U-bent portion (22c) and spaced a sufficient distance from the lower surface of the lug (18) to permit lifting of the prong (22a) clear out of the passage of coupling element rows (E) of a slide fastener.

AUTOMATIC LOCK SLIDER FOR SLIDE FASTENER

This invention relates to a slider for slide fastener and has particular reference to a slider having an automatic lock function.

There are known numerous automatic lock sliders for slide fasteners.

Figures 6 and 7 of the accompanying drawings illustrate a prior art slider encountered with a problem which the present invention seeks to overcome. The prior art slider disclosed in German Patent 842632 comprises a slider body 100, a lug or trunnion 110 integrally formed on the top surface of the body 100, a locking spring member 120 interposed between the body 100 and the lug 110 and having a locking prong 130 normally urged downwardly into a guide channel 140 in the body 100 for the passage therethrough of a pair of opposed coupling element rows of a slide fastener (not shown). The locking spring member 120 adapted to lock the slide fastener against longitudinal movement has a profile shown in Figure 7 and includes a cut-out tongue 150 resting against the bottom wall of the lug 110. The slider body 100 has a mound 160 at its rear end over which the spring member 120 is bent. A pull tab 170 for moving the slider has its pivotal end 180 disposed underneath the spring member 120. When moving this prior art slider in a direction to close the slide fastener; i.e. toward the left as viewed on Figure 6, this is done by rotating the pull tab 170 counter-clockwise into a position beyond a vertical axis of the slider body 100. However, due to the structural features of the slider illustrated in Figure 6, the spring member 120 is prone to move back down at its rear end against upward pull exerted by the pull tab 170 so that the locking prong 130 fails to retract away from the passage of the fastener element rows and tends to scratch the surfaces of the latter during closing operation of the slider.

It is therefore the primary object of the present invention to eliminate the above problem of the prior art slider.

According to the invention, there is provided an automatic lock slider for slide fastener which comprises a slider body including a pair of parallel spaced upper and lower wings joined at their front end by a neck so as to define therebetween a guide channel for the passage of a pair of opposed rows of coupling elements, a support lug integral with and disposed over the top surface of said upper wing, a pull tab pivotally supported in said lug, and a locking member in the form of a polygonal leaf spring having at one end an integral locking prong normally urged into said guide channel and at the other end a U-bent spring portion and a bulged portion intermediate said prong and

said U-bent portion, said bulged portion being spaced apart from the lower surface of said lug by a sufficient distance to permit lifting of said locking prong clear out of said guide channel, and said U-bent portion being spaced slightly apart from the lower surface of said lug and from the top surface of said upper wing, respectively.

The invention will be described in detail by way of example with reference to the accompanying drawings. Like reference numerals refer to like or corresponding parts throughout the several views.

Figure 1 is a longitudinal cross-sectional view of a slider for slide fastener embodying the present invention;

Figure 2 is a cross-sectional view taken on the lines II - II of Figure 1;

Figure 3 is a perspective view of the slider of Figure 1 with a part isolated;

Figure 4 is a view similar to Figure 1 but showing the slider in a position to couple opposed rows of fastener elements or to close a slide fastener;

Figure 5 is a longitudinal cross-sectional view of a portion of a modified form of slider embodying the invention; and

Figures 6 and 7 illustrate the prior art slider already described herein above.

Referring now to the drawings and Figures 1 and 3 in particular, there is shown an automatic lock slider 10 for slide fastener provided in accordance with the invention. The slider 10 comprises a slider body 11 including a pair of parallel spaced upper and lower wings 12, 13 joined at their front end by a neck 14 (otherwise known as a "diamond") so as to define therebetween a substantially Y-shaped guide channel 15 for the passage of a pair of opposed coupling element rows E of a slide fastener (not shown). The upper wing 12 has a pair of flanges 16, 16 directed inwardly respectively from opposite lateral edges thereof and spaced from a corresponding pair of similar flanges 17, 17 of the lower wing 13 as better shown in Figure 3.

A support lug or trunnion 18 integral with and disposed on a flat top surface 12a of the upper wing 12 is provided centrally with an elongated aperture 19 for receiving a pull tab 20 pivotally therein in a well known manner. The lug 18 also has a longitudinal slot 21 communicating with the aperture 19 and adapted to receive therethrough a locking member 22 in the form of a polygonal leaf spring of the configuration illustrated in Figure 3.

The top surface 12a of the upper wing 12 has a central portion registering with the slot 21 and

offset at its rear end relative to the lower wing 13 to provide an abutment 12b against which one end of the locking member 22 bears as later more fully described.

The locking member 22 has at one of its ends a first locking prong 22a and a second locking prong 22b laterally formed adjacent the first prong 22a, both prongs 22a and 22b being integral with the member 22 and normally urged downwardly into the guide channel 15. The locking member 22 has at the other end a U-bent spring portion 22c including an upper leg 22c' and a lower leg 22c'', the upper leg 22c' having lateral protuberances 22c'1, 22c'1 at its terminal end as shown in Figures 2 and 3. The locking member 22 includes a bulged portion 22d intermediate between the prong 22a and the U-bent portion 22c and defining with the top surface 12a of the upper wing 12 a cavity 23 for receiving a hook end 20a of the pull tab 20 as better shown in Figures 1 and 4.

The lug 18 has a concaved lower surface portion 18a configured in conformity with the contour of the bulged portion 22d of locking member 22 and spaced apart therefrom a sufficient distance to permit lifting of the locking prong 22a clear off the guide channel 15. The lug 18 includes a downward projection 18b serving as an abutment against which the terminal end of the upper leg 22c' of the U-bent portion 22c bears.

As better shown in Figure 2, the front end portion of the lug 18 which registers in position with the neck 14 of the slider body 11 is internally bifurcated to provide opposed side walls 18c, 18c between which is formed a cavity 18d for accommodating the U-bent portion 22c of the locking member 22. The bifurcated side walls 18c, 18c have respective vertical abutments 18e, 18e against which the protuberances 22c'1, 22c'1 of the locking member 22 rest, so that the locking member 22 are arrested against longitudinal back and forth displacement during manipulation of the pull tab 20.

The locking member 22 is assembled in place within the slider body 11 with the first locking prong 22a borne against the abutment 12b of the upper wing 12, with the terminal end of the upper leg 22c' of the U-bent portion 22c borne against the projection 18b and with the protuberances 22c'1, 22c'1 of the upper leg 22c' borne against the abutments 18e, 18e of the side walls 18c, 18c, the locking member 22 being thus wholly disposed in a snugfit with the lug 18. In this disposition, the upper leg 22c' of the U-bent portion 22c is slightly spaced apart from the lower surface of the lug 18 adjacent the front end of the slider body 11 and the lower leg 22c'' is likewise spaced from the top surface of the upper wing 12, so that the U-bent portion 22c can reserve sufficient spring action.

When moving the slider 10 leftward as viewed in the drawings or in a direction to close the slide fastener, the pull tab 20 is rotated counter-clockwise from the position of Figure 1 to the position of Figure 4 and pulled to lift the locking member 22, hence the locking prong 22a out of the guide channel 15 thereby releasing the coupling elements E of the slide fastener. Since there is sufficient clearance between the bulged portion 22d of the locking member 22 and the lower surface 18a of the lug 18, the locking prong 22a can be lifted clear out of the passage of the coupling elements E of the fastener, eliminating the risk of scratches or damage to the elements E.

Figure 5 shows a modified form of slider which is similar to the slider 10 above described and shown in Figure 1 except that the top surface 12a of the upper wing 12 at the front end thereof is cut away to widen the gap 23 between the lug 18 and the upper wing 12 but to reduce the overall thickness of the slider 10.

Claims

1. An automatic lock slider (10) for slide fastener which comprises a slider body (11) including a pair of parallel spaced upper and lower wings (12, 13) joined at their front end by a neck (14) so as to define therebetween a guide channel for the passage of a pair of opposed rows of coupling elements (E), a support lug (18) integral with and disposed over the top surface of said upper wing (12), a pull tab (20) pivotally supported in said lug (18), and a locking member (22) in the form of a polygonal leaf spring having at one end an integral locking prong (22a) normally urged into said guide channel (15) and at the other end a U-bent spring portion (22c) and a bulged portion (22d) intermediate said prong (22a) and said U-bent portion (22c), said bulged portion (22d) being spaced apart from the lower surface of said lug (18) by a sufficient distance to permit lifting of said locking prong (22a) clear out of said guide channel (15), and said U-bent portion (22c) being spaced slightly apart from the lower surface of said lug (18) and from the top surface of said upper wing (12), respectively.

2. An automatic lock slider (10) according to Claim 1 wherein said lug (18) has a downward projection (18b) for abutting engagement with the terminal end of said U-bent portion (22c).

3. An automatic lock slider (10) according to Claim 1 wherein said locking member (22) has lateral protuberances (22c'1, 22c'1) for abutting engagement with abutments (18e, 18e) of said lug (18).

4. An automatic lock slider (10) according to Claim 1 wherein the top surface of said upper wing

(12) is flat.

5. An automatic lock slider (10) according to Claim 1 wherein the top surface of said upper wing (12) at the front end thereof is cut away to reduce the overall thickness of the slider (10).

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6. An automatic lock slider (10) according to Claim 1 further including a second locking prong (22b) laterally formed integral with said locking member (22) and disposed adjacent said first locking prong (22a).

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FIG.1

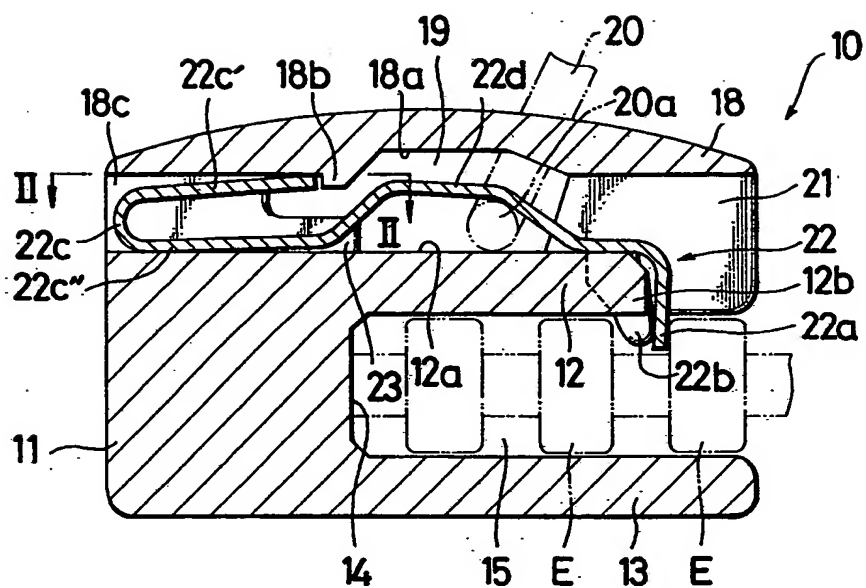


FIG.2

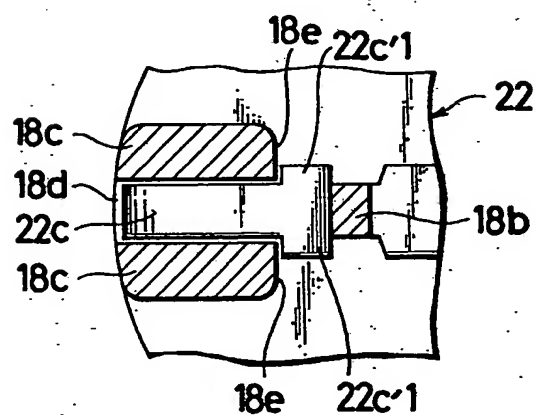


FIG. 3

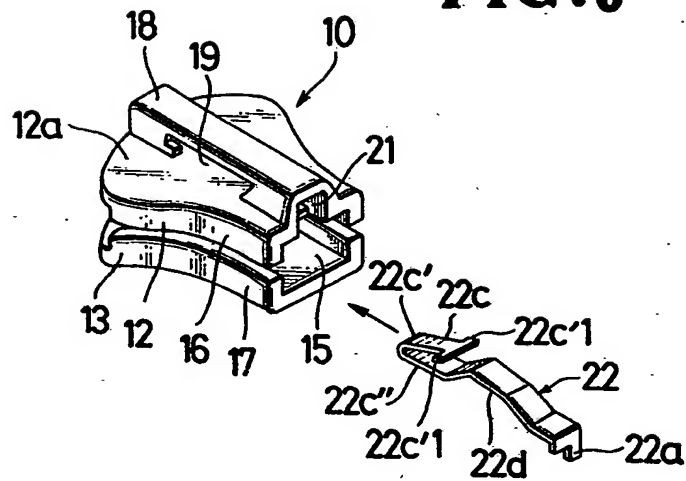


FIG. 4

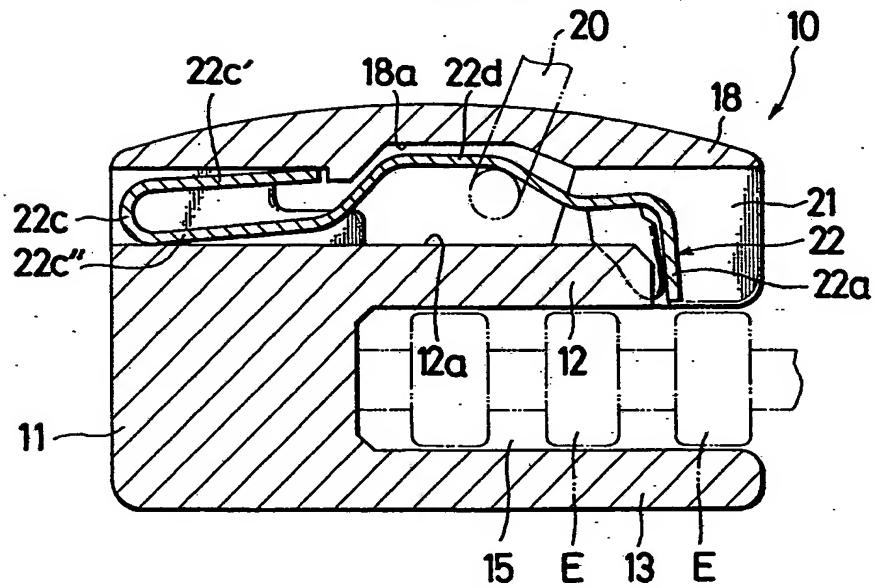


FIG. 5

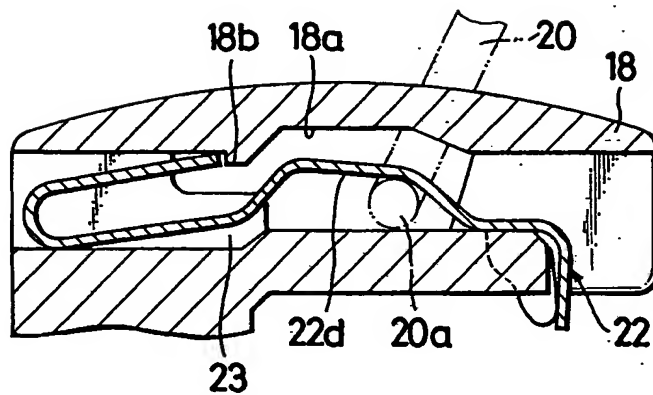


FIG. 6

PRIOR ART

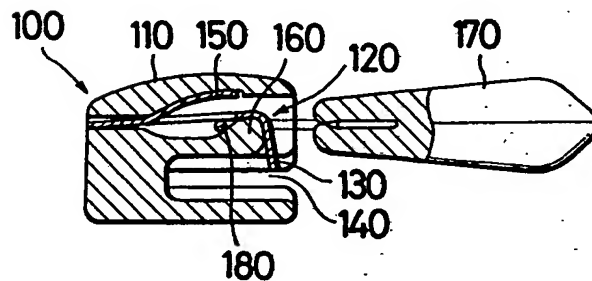
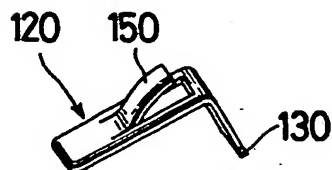


FIG. 7

PRIOR ART





EP 89 11 9533

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	CH-A-238508 (LA MECCANICA SA.) * figure 1 *	1, 3	A44B19/30
D,A	DE-C-842632 (RI-RI-WERKE A.G.) * page 2, lines 27 - 107 * * figures 1-4 *	1-3	
A	FR-A-885858 (M. WINTERHALTER) * page 3, lines 67 - 76 * * page 3, line 86 - page 4, line 35 * * figures 15-17, 19-21 *	1, 3	
A	FR-A-2174848 (OPTI-HOLDING AG)		
A	FR-A-1194766 (LIGHTNING FASTENERS LIMITED)		
A	CH-A-264281 (G. BERNASCONI)		
A	US-A-3427692 (D. H. ROWLANDS)		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A44B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 30 JANUARY 1990	Examiner BOURSEAU A.M.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
I : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			